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Delivering Business Value with Lean and Agile

Leveraging Lean and Agile methods provides organizations with competitve advantages including reduced time to market, faster return on investment and streamlined business processes.

Based on a glance at current business models, theories and white papers, one could easily conclude that *agility* has become the most popular business term since *value proposition*. Unfortunately, much of Agile's original meaning has been diluted as it has become the buzzword de jour. The same can be said for *Lean*, an older concept from manufacturing that is being adapted to services-based businesses as well as software engineering with similar loss of meaning. With increased interest in adoption of these methods, we need to discern the facts from fiction so we can make better and more informed decisions.

This awareness paper introduces the reader to Agile and Lean concepts and provides a basic level of understanding for each. We'll provide a brief background on each method and summarize their primary business advantages for delivering value. But before we dive in, let's take a brief look at what we now consider the traditional method for systems development, the process most prevalent today. With this background it is easy to see how Agile and Lean are not just new methods but completely different mindsets!

Plan-Driven

When software first emerged in importance during the 1950s and 1960s, people needed a method for managing large systems development projects. Because software was not as well understood and didn't fit as neatly into other systems engineering disciplines, early development efforts were largely undisciplined and produced software of low quality that was late and over budget. But as software became more critical in large aerospace systems development projects (including satellites, missiles and spacecraft), organizations like the U.S. Department of Defense (DoD) and IBM began to define standard processes for software development[1]. Drawing from mainline engineering fields, these plan-driven methods used well-defined processes and a requirements/design/build approach to software development. The prevailing wisdom was that software development teams *needed more discipline*, so plan-driven methods started defining very rigid processes and deliverables that fit nicely into existing systems engineering approaches.

Early software projects were late, over budget and had low quality

In 1970 Dr. Winston Royce documented this approach[2] using the term *waterfall* to describe the flow from one phase to the next. The name stuck, and for the next 25 years, advances in software and systems engineering focused ***not on finding a better method but on improving the fundamentally flawed plan-driven method***. By the 1980s and early 1990s approaches like the Capability Maturity Model (CMM) emerged as a means to guide organizations through five levels of software process maturity. Today, the plan-driven approach is the *traditional way* systems are developed throughout the world and the approach is found in many organizations.

Unfortunately, in practice this approach rarely succeeds and project budget and time overruns are quite common[3]—the same problems that were happening 40 years ago. This

1 Boehm, Barry and Richard Turner. 2004. Balancing Agility and Discipline – A Guide for the Perplexed. Boston: Addison-Wesley.

2 Royce, Dr. Winston W. 1970. Managing the Development of Large Software Systems. Proceedings, *IEEE WESCON*

3 The Standish Goup. 2006. CHOAS Report of over 50,000 worldwide IT projects found that 65% of them are over time, budget or completely fail.

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Forty years later most IT projects are still late, over budget, and have low quality.

is because the plan-driven approach was never designed to support systems development in a style that's natural to the teams of people required to develop and deliver these systems.

In practice, the plan-driven approach has inherent weaknesses including:

- Long timelines from idea to delivered working system are typical
- Cost and time overruns are quite common
- Plan-Driven methods do not accommodate change well
- Progress is measured as adherence to the plan and not to the value delivered to the stakeholders

With the emerging global economy continually compressing timelines and increasing competitive pressure, these weaknesses can be devastating. Organizations must respond quickly to sudden shifts in a dynamic and fluid business environment that continually involves new priorities and technology. Many a project with a multi-year development cycle is obsolete before it is ready to launch, delivering limited business value after a large investment of funds.

Agile

During the 1970s and 1980s early pioneers including Tom Gilb[4] and Barry Boehm[5] were introducing evolutionary and iterative software development methods, but it wasn't until the 1990s that methods like Extreme Programming (XP) and Scrum began to emerge from the development community. These team-centric, ground-up approaches were a backlash against the increasingly bureaucratic plan-driven processes being used on software projects of the day. Innovative thought leaders went about building processes to support the work they and their teams did in a more natural fashion. The results were the antithesis of big up-front requirements and design processes used in the plan-driven approach.

Agile promotes high team cohesion, collaboration and frequent, short delivery cycles

In 2001 a small group of software thought leaders who had been pioneers in using these methods met and defined the Agile Manifesto[6] in an effort to capture the essence of the new approach. Since then, Agile has become the umbrella term used to describe the family of methods that promote high team collaboration and frequent short, delivery cycles of working systems. These methods are always team-centric and place a high emphasis on team communication, collaboration and feedback. Since 2001 Agile methods including Scrum, XP, Feature-Driven Development and Crystal have grown in popularity. Today, for example, there are nearly 10,000 certified trained Scrum Masters[7], the agile coaches on Scrum teams. Thousands of organizations and projects, small and large, are increasingly adopting Agile methods with impressive results[8].

Successful Agile teams use approaches similar to inventors: They try one small thing, test it, and if it doesn't show promise, try something else. If it does work, refine it, test it again, get customer feedback, and keep repeating this cycle until a finished product is launched. The result is a strong focus on getting something working quickly and refining it through real use and feedback from the customer.

Unlike plan-driven, Agile doesn't try to lock down all the requirements before designing and building. Instead, Agile executive sponsors establish the top few critical business objectives that serve as planning guideposts. These are reviewed regularly and can easily change as the needs of the business shift. Agile encourages business owners to collaborate with the team every 1-4 weeks (an iteration) as they refine plans, discover requirements and continually evolve the working system. Using this method Agile offers several significant advantages not only to the team but also to their sponsors:

- ✓ Solutions get to market faster and development cycle times are reduced.
- ✓ Business leaders can see results quickly and exert more control over development costs. Failing projects can be cancelled early, lowering risk and potential waste.
- ✓ Changes in priority can be addressed immediately with minimal waste. Change is welcome, not eschewed.
- ✓ Collaboration between business leaders and development teams lessens misunderstandings on both sides and builds stronger relationships and overall team spirit.

4 Gilb, Tom. 1985. Evolutionary Delivery versus the Waterfall Model. ACM Software Requirements Engineering Notes. July 1985.

5 Boehm, Barry. 1986. A Spiral Model of Software Development and Enhancement. ACM SIGSOFT Software Engineering Notes. Vol. 11 (4): 14-24.

6 Multiple Authors. 2001. Manifesto for Agile Software Development. www.agilemanifesto.org

7 Schwaber, Ken. 2007. Scrum - It's About Common Sense. www.controlchaos.org

8 Multiple authors. 2007. Agile Journal – An Agile Business Publication. www.agilejournal.com/articles/case-study

- ✓ Development teams strongly prefer to work in team-centric environments that foster experimentation and shared accountability.

Although Agile is still predominantly applied on software development projects, increasingly Agile methods are being used for other types of projects including marketing and regulatory compliance.

Lean

What Agile and Lean have in common is their value-driven philosophy. Agile is about delivering value for the organization, based on a clear understanding of its values and objectives. Lean is an approach that looks at an organization's processes, particularly their core value stream, through the lens of what is valuable to the customer. A Lean analysis divides all process activities and operations into three types:

1. **Customer Value Added** - Those that add value for the customer
2. **Business Value Added** - Those that add value for the business, and therefore are essential to adding value for the customer
3. **Non-Value Added** - Those that add no value for either the customer or the business. This is also known as *waste*.

The goal of Lean is to eliminate as much of the waste from the process and to balance and optimize the *flow* of work through the process for maximum efficiency. Lean has its origins in the Toyota Production System, which helped Toyota grow from a small loom manufacturer in pre-war Japan to the world's largest and most valuable automobile company[9]. Although originally developed for optimizing manufacturing processes, Lean is now being applied to services-based business processes and even software development.

Lean has seven basic principles[10]:

1. **Eliminate waste** – which includes waiting on parts or on other teams, miscommunication, designing features customers do not use, or any production steps that add no value.
2. **Amplify learning** – test for defects early and often, show models to end-users for customer requirements.
3. **Decide as late as possible** – allow decisions to be made when there are more facts and fewer predictions and assumptions.
4. **Deliver as fast as possible** – the sooner the product is delivered, the sooner you get feedback to incorporate into the next iteration.
5. **Empower the team** – let good people do their jobs and bring their ideas forward, while managers provide suggestions and motivating goals.
6. **Build integrity in** – make everything about the product consistent with the company "brand," delivering the value customers expect.
7. **See the whole** – find the root causes of defects and waste in the system and eliminate them, so that all parts of the system work smoothly together.

Lean focuses on what's valuable for the customer and removes waste from processes

A well-implemented Lean system offers advantages including:

- ✓ Identifying and eliminating waste in production processes often reduces costs and expands capacity
- ✓ Instills a philosophy and an environment of continuous learning, testing and product improvement
- ✓ Identifies opportunities to improve product quality
- ✓ Reduces risks by product testing and feedback at each iteration

Lean and Agile are complimentary and can be used together

The shared values for Agile and Lean are complimentary. Today, progressive organizations are blending the best ideas from both methods. The result is an approach using Lean to analyze an organization's *value stream* and to remove waste from the process. When changing existing systems or creating new systems, Agile is employed to deliver these systems incrementally. Using both methods brings people, process and technology into concert to ensure holistic solutions are delivered.

Summary

The movement from Plan-Driven to Lean and Agile methods is well underway. Some progressive organizations have already made the transition within IT and are now moving aggressively to spread these methods into other areas of their business. Organizations that are just starting their migration are still

9 Womack, James P., Daniel T. Jones and Daniel Ross. 1991. The Machine that Changed the World: The Story of Lean Production. New York: Harper Business.

10 Poppendieck, Mary and Tom Poppendeick. 2007. Implementing Lean Software Development: From Concept to Cash. Boston: Addison-Wesley

part of the early majority and can expect to gain a significant competitive advantage based on the benefits.

Adopting Lean or Agile is often quite challenging for organizations based on the myriad of issues involved with adopting and adapting these methods. Organizations seeking to make these transitions typically leverage experienced guides to help them apply these methods in their teams and culture. Changing entrenched plan-driven mindsets is no small task and adoption risks can't be understated. Yet for organizations seeking competitive marketplace advantages including reduced time to market, faster return on investment and streamlined business processes, the value of Lean and Agile is well worth the investment.

Company Overview

Founded in 1997, Dominion Digital is an award-winning process and technology consulting firm that has helped more than 100 clients rapidly drive business value by bringing focus, direction and momentum to their high priority initiatives. For us, Lean and Agile are not simply buzzwords, they are principles at the center of our approach to deliverying value. We help organizations adopt Lean and Agile by assessing their culture and carefully rolling out practices that deliver the highest value early. To learn more about our services or for a free Lean or Agile assessment, contact us at www.dominiondigital.com.

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Recommended Resources

Agile Alliance
www.agilealliance.org

Lean Enterprise Institute
www.lean.org

Agile Journal
www.agilejournal.com

Scrum Alliance
www.scrumalliance.org

Evolutionary Project Management
www.gilb.com

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